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United States
Department of
Agriculture
**Forest
Service**
Southwestern
Region

Forest Pest Management Report

R-3 85-5

BIOLOGICAL EVALUATON
Spruce Beetle

Population Trend and Tree Losses,
Fort Apache Indian Reservation,
Arizona

January 1985

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USDA Forest Service, Southwestern Region
State and Private Forestry
Forest Pest Management
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INTRODUCTION

Tree losses caused by the spruce beetle, Dendroctonus rufipennis (Kirby), continued to be a significant problem in the spruce-fir forest type on the Fort Apache Indian Reservation during 1984. This outbreak was initially detected during the spring of 1981. During subsequent years, Forest Pest Management and the Bureau of Indian Affairs have conducted biological evaluations and loss assessment surveys concerning this spruce beetle outbreak (Ragenovich 1982, Linnane 1983, and Linnane and Telfer 1984).

This report documents surveys conducted to (1) estimate the number of newly attacked trees, (2) evaluate and predict the infestation trend, and (3) provide management alternatives and recommendations. Survey data were collected by Forest Pest Management and Bureau of Indian Affairs personnel during September and October 1984.

TECHNICAL INFORMATION

Insect. Spruce beetle, Dendroctonus rufipennis (Kirby)

Host. Engelmann spruce, Picea engelmannii Parry

Life History and Evidence of Infestation. Schmid and Frye (1977) and Massey and Wygant (1954) describe the spruce beetle life cycle and behavior in detail. Briefly, Dendroctonus rufipennis predominantly has a 2-year life cycle, although 1- and 3-year life cycles have been described. The 3-year life cycle may be common on cold sites, i.e., high elevation north-facing slopes. Adult D. rufipennis usually attack host trees during June and July. Egg gallery construction and oviposition continue through the summer. Immature larvae are present by October and overwinter. Larvae resume feeding in spring and develop to pupae before summer. Pupae transform to adults which overwinter a second time. These insects emerge in late spring and early summer to attack new host material.

Spruce beetles generally prefer to attack green windthrown or other recently downed spruce. As a result, endemic beetle populations are always present, breeding in scattered down material, in the spruce-fir forest type. Outbreaks generally begin after a major forest disturbance (i.e., a large windthrow) creates an abundance of suitable breeding material. Beetle populations rapidly increase in the down material and then readily attack standing spruce. Under favorable conditions, outbreaks may persist until suitable large diameter, host material is depleted. On occasion, unfavorable climatic conditions, principally extreme cold, cause outbreaks to collapse.

Spruce beetle outbreaks are difficult to detect. Tree crowns fade approximately 1 year after attack; however, discolored needles may remain on twigs for only a short duration, making recently attacked trees difficult to separate from snags. Newly attacked trees can often only be detected by close examination for boring dust. Pitch tubes may or may not be readily visible.

History of Spruce Beetle on the Fort Apache Indian Reservation. Ragenovich (1982) summarized the history of spruce beetle on the Fort Apache Indian Reservation as follows: "Large areas of spruce mortality were first detected in the White Mountains of the Fort Apache Indian Reservation in 1904. This mortality was most likely the result of spruce beetle activity. The first recorded spruce beetle outbreak occurred from 1948 to 1952, when an estimated 22 percent of the spruce was killed in the Ord Creek drainage. The next recorded outbreak occurred from 1968 to 1971 when beetle populations built up in down material and spread to standing green trees, killing tens of thousands of trees in five drainages. The outbreak subsided abruptly in 1971 when record-low temperatures caused high larval mortality."

Location and Extent of the Current Outbreak. This outbreak was initially detected in 1981. Subsequently, attacked trees have been detected throughout the spruce-fir type on reservation lands including the Mount Baldy Wilderness Area (figure 1). There are approximately 38,600 acres of type on the reservation. In 1982, an aerial detection survey estimated 100,000 fading spruce in this zone. The detection survey in 1983 estimated over 200,000 fading spruce, with approximately 75,000 of these trees occurring within the wilderness area. Outside the wilderness, the spruce-fir type has been divided into five management compartments. In 1983, Burnt Mountain and Bull Cienega compartments had high concentrations of fading spruce, while Diamond Butte, Tiger Butte, and Mount Ord compartments had fewer fading spruce than in the previous year. Spruce beetle activity also increased on adjacent lands within the Apache-Sitgreaves National Forests, principally in the Mount Baldy Wilderness Area.

In 1984, aerial detection surveys estimated 13,000 fading spruce on reservation lands, a substantial decrease from previous years. Approximately 9,000 of these currently fading spruce occurred within the Mount Baldy Wilderness Area.

Host Stand Condition. Infested stands are predominately spruce (approximately 60 percent of basal area); other principal species are corkbark fir, Abies lasiocarpa var arizoncia (Merriam) Lemm., aspen, Populus tremulodies Mich., and Douglas-fir, Pseudotsuga menziesii (Mirb.) Franco. Average diameter of live spruce is now approximately 15 inches. Stand basal areas range from 170 to 200 square feet per acre. Standing infested and dead spruce are abundant in many areas, as well as down spruce from past spruce beetle outbreaks.

The 1983 biological evaluation (Linnane and Telfer 1984) estimated current attacked spruce (1983) at 1.2 to 1.4 trees per acre. Spruce basal area losses attributed to the current outbreak were estimated to average 26 square feet per acre. Spruce volume losses have been estimated in excess of 100 MMBF.

METHODS

Survey Design. Two survey methods were used to estimate current tree losses and the spruce beetle population trend. These were a systematic variable plot cruise and a sequential insect sampling plan.

Commerical spruce-fir stands on reservation land have been divided into five management compartments. A systematic variable plot cruise was conducted within all compartments. Cruise lines were located in cardinal directions across contour at 20-chain intervals over the entire spruce-fir forest type in each compartment. Variable sample plots were located along these lines at 5- or 10-chain intervals, depending on required sampling intensity.

Sampling intensity was determined using coefficient of variation estimates from the previous year's survey (Linnane and Telfer 1984) and in the following formula.

$$SE\% = \frac{CV}{\sqrt{n}} \quad \text{or} \quad n = \left(\frac{CV}{SE\%}\right)^2$$

Where SE% = Acceptable sampling error
CV = Coefficient of variation
n = Sample size

For this survey, a 20-percent standard error of the mean was considered satisfactory precision. Based on these parameters, sample size was determined for each management compartment as follows:

Diamond Butte	-	51 sample plots
Mount Ord	-	132 sample plots
Bull Cienega	-	74 sample plots
Sunrise	-	49 sample plots
Burnt Mountain	-	43 sample plots

All plots trees were tallied by species and diameter. Spruce was classed in one of five categories based on beetle activity: (1) Green--uninfested spruce; (2) current attacks (1984)--parent adult, eggs, or small larvae present; (3) previous attacks (1983)--fading foliage and large larvae, pupae, or adults present; (4) old attacks--no spruce beetle present and foliage mostly dropped: and (5) partial attacks--beetle attacks limited to one side of the bole and foliage still green.

A sequential sampling plan for spruce beetles in standing trees (Knight 1960) was utilized to evaluate infestation trend in areas of concentrated beetle activity. Knight's (1960) procedure classifies a particular infestation into the following categories: (1) Increasing--emerging beetles will kill more trees than presently infested; (2) static--they will kill about the same number; and (3) decreasing--they will kill fever trees.

Active infestations were located using a sketch map drawn during a current aerial detection survey. Concentrations of greater than 50 fading spruce served to locate the general sampling area. Within each sampling area, two 6- by 6-inch bark samples were removed from opposite sides of the lower bole of each infested sample tree. Sample trees were assumed to have been attacked in 1983. All living spruce beetles beneath the bark samples were tallied. Sampling continued in each sampling area until the infestation trend could be classified under Knight's (1960) sequential plan. A minimum of 20 samples are required to reach a decreasing or increasing decision. A minimum of 38 samples are required to classify an infestation as static.

Data Analysis. Data from the variable plot cruise were compiled and analyzed using the "Pest" program stored at the Fort Collins Computer Center. This program provided the average trees per acre and basal area per acre estimates by damage categories, with standard deviation and standard error estimates. Data from the sequential brood sampling survey were tallied in the field and compiled in tabular form for each sampling location.

RESULTS

Sampling Intensity. The systematic variable plot cruise was completed on 20,082 acres of spruce-fir forest type outside the Mount Baldy Wilderness. A total of 501 sample points were measured in the 5 management compartments (table 1).

The sequential brood sampling plan was conducted at five locations (figure 1).

Tree Losses. Basal area and trees per acre estimates for spruce beetle-attacked trees along with nonhost tree estimates by management compartment are presented in table 2. During 1984, new spruce beetle attacks ranged from 0.1 trees per acre in the Sunrise compartment to 6.4 trees per acre in the Burnt Mountain compartment. Basal area estimates for currently attacked spruce ranged from 0.5 square feet per acre in the Sunrise compartment to 7.2 square feet per acre in the Burnt Mountain compartment.

The spruce component killed or infested by spruce beetles during this recent outbreak is substantial. The basal area loss estimates by management compartments were 26 percent-Diamond Butte, 18 percent-Mount Ord, 19 percent-Bull Cienega, 7 percent-Sunrise, and 40 percent-Burnt Mountain.

Stand Structure and Composition. Stand tables for spruce and other nonhost tree species by management compartment are presented in tables 3 through 22.

Total stand basal areas ranged from 157 to 239 square feet per acre, with spruce representing an average 72 percent of the overstory basal area. Other major tree species included corkbark fir (12 percent basal area), Douglas-fir (12 percent basal area), and aspen (4 percent basal area).

Infestation Trend. The sequential brood sampling plan and the variable plot cruise data were indicators of infestation trend.

Sequential brood sampling results are presented in table 24. All five sample locations easily fell within the increasing category. Emerging beetles should kill more trees than currently infested at least in the vicinity of sampling locations.

Although the brood sampling was accomplished in October, the majority of spruce beetles found under the bark were large larvae. Adults were present in lower than expected numbers; however, little evidence of hibernators (adult beetles which emerge and than reenter the lower tree bole) was found. Emergence holes in the bark samples were common, although not in significant numbers. Sample trees all had signs of fading foliage and obvious woodpecker activity.

The variable plot cruise data estimated the number of newly attacked trees per acre, indicating infestation trend. During 1984, beetle activity in Diamond Butte, Bull Cienega, and Burnt Mountain management compartments occurred at a higher frequency than estimates from the 1982 and 1983 attack periods (Linnane 1983, Linnane and Telfer 1984). Table 23 summarizes estimates for newly attacked spruce per acre and total numbers of newly attacked trees by management compartment.

DISCUSSION

The spruce beetle has had a significant impact on timber stands within the Fort Apache Indian Reservation. A high percentage of the large diameter spruce (>25 inches d.b.h.) has been killed and up to 40 percent of the spruce basal area has been lost (Burnt Mountain compartment).

The 1984 survey results indicate tree losses can be expected to continue during 1985. The variable plot cruise estimated a significant number of new attacked trees occurred during 1984. The brood sampling estimates indicated a sufficient number of adult beetles should be available for the 1985 flight period to successfully attack more trees than currently infested. However, the ability of spruce beetles to locate and successfully attack new host trees will be tested, since a high percentage of the most suitable host trees has already been killed.

During the sequential brood sampling survey, we expected to observe primarily callow and new adult insects under the bark. This was not the case. The insects were principally large or mature larvae. Also, little evidence of hibernators was found. While the 2-year life cycle described by Massey and Wygant (1954) is considered generally applicable (Schmid and Frye 1977), variations in life cycle length are not uncommon (Knight 1961, McCambridge and Knight 1972). Knight (1961) reported "a normal life cycle is difficult to describe; the variations due to environmental conditions are such that no two cycles are alike." On the Fort Apache Indian Reservation, variations from

the 2-year life cycle appear common. These variations may be either 1- or 3-year versions of the spruce beetle life cycle. The life cycle issue is further confused by the existence of high number of partially attacked trees (Linnane 1983, and Linnane and Telfer 1984), making it difficult to establish the year of attack.

MANAGEMENT ALTERNATIVES

Alternative actions considered for the current spruce outbreak have been described in detail by Linnane and Telfer (1984). They are summarized as follows:

1. No action, including:[1]
    a. Salvage logging
    b. Presalvage logging
2. Direct suppression, including:
    a. Treatment of individual infested trees
    b. Trap trees
3. Preventive insecticidal spray

RECOMMENDATIONS

During recent years, a combination of salvage and presalvage logging has been implemented in the outbreak area. We recommend this action be continued.

In designing salvage or presalvage operations, residual stand windfirmness is an important consideration. Also, any logging operations should be closely monitored to insure a minimum of logging debris remains. Stump height should be kept below 1.5 feet. Cull logs and tops should be bucked into short lengths and scattered in open areas. Log decks containing infested material should be removed to millsites prior to beetle flight.

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[1]Salvage and presalvage logging have little or no effect on the outbreak progress.

LITERATURE CITED

Knight, F. B. 1960. Sequential sampling of Engelmann spruce beetle infestations in standing trees. USDA Forest Serv. Res. Note 47. 4 p.

_____. 1961. Variations in the life history of the Engelmann spruce beetle. Ann. Entomol. Soc. Amer. 54:209:214.

Linnane, J. P. 1983. Biological evaluation, spruce beetle, Fort Apache Indian Reservation, Arizona. USDA Forest Serv., Southwestern Reg. R-3 83-6. 32 p.

Linnane, J. P., and W. G. Telfer. 1984. Biological evaluation, spruce beetle population trend and timber resource losses. Fort Apache Indian Reservation, Arizona. USDA Forest Serv., Southwestern Reg. R-3 84-9 30 p.

Massey, C. L., and N. D. Wygant. 1954. Biology and control of the Engelmann spruce beetle in Colorado. USDA Circ. No. 944. 35 p.

McCambridge, W. F., and F. B. Knight. 1972. Factors affecting spruce beetles during a small outbreak. Ecol. 53:830-839.

Ragenovich, I. 1982. Biological evaluation, spruce beetle, Fort Apache Indian Reservation, Arizona. USDA Forest Serv., Southwestern Reg. R-3 82-6. 22 p.

Schmid, J. M., and R. H. Frye. 1977. Spruce beetle in the Rockies. USDA Forest Serv. Gen. Tech. Rep. RM-49. 38 p.

TABLE 1.--Management compartment acreage and numbers of variable sample points measured during the 1984 spruce beetle survey

Compartment	Acreage	Number of samples
Diamond Butte	3,483	92
Mount Ord	6,396	154
Bull Cienega	4,010	96
Sunrise	2,819	63
Burnt Mountain	3,374	96
Total	20,082	501

TABLE 2.--Variable point sample results for the 1984 spruce beetle survey

Tree category	Diamond Butte		Mount Ord		Bull Cienega		Sunrise		Burnt Mountain	
	B.A.[1]	T.A.[2]	B.A.	T.A.	B.A.	T.A.	B.A.	T.A.	B.A.	T.A.
Spruce										
Green	74.7 ± 8.1	98.6 ± 13.3	123.1 ± 7.6	141.6 ± 11.8	126.9 ± 8.8	176.1 ± 15.1	140.5 ± 11.7	194.6 ± 25.8	58.1 ± 5.1	92.1 ± 10.8
Current attacks	5.5 ± 1.6	5.2 ± 1.5	1.6 ± 0.9	1.4 ± 0.8	5.0 ± 2.5	3.6 ± 1.7	0.5 ± 0.5	0.1 ± 0.1	7.2 ± 1.8	6.4 ± 1.8
Previous attacks	4.6 ± 1.3	2.8 ± 0.9	2.7 ± 0.9	1.5 ± 0.6	2.8 ± 1.9	3.0 ± 2.3	0.5 ± 0.5	0.1 ± 0.1	6.6 ± 1.5	5.7 ± 2.0
Old attacks	15.3 ± 3.3	9.3 ± 2.4	21.0 ± 3.1	15.5 ± 2.8	21.9 ± 4.0	16.3 ± 3.4	9.5 ± 3.0	9.5 ± 3.4	23.8 ± 3.9	16.8 ± 2.9
Partial attacks	0.3 ± 0.3	0.2 ± 0.2	1.2 ± 0.5	0.7 ± 0.3	0.6 ± 0.4	0.1 ± 0.1	0.9 ± 0.7	0.5 ± 0.3	1.9 ± 0.9	1.2 ± 0.7
Total attacks	25.8 ± 4.4	17.6 ± 3.3	26.5 ± 3.7	19.0 ± 3.2	30.3 ± 6.3	23.0 ± 5.2	11.4 ± 3.2	10.2 ± 3.5	39.4 ± 5.1	30.1 ± 3.9
Total spruce	100.5	116.2	149.6	160.6	157.2	199.1	151.9	204.8	97.5	122.2
Corkbark fir	37.5 ± 5.5	53.7 ± 8.5	20.6 ± 2.9	39.3 ± 6.6	13.4 ± 2.6	29.7 ± 7.4	30.9 ± 5.6	62.0 ± 12.2	7.5 ± 1.9	15.4 ± 4.6
Douglas-fir	12.4 ± 3.0	8.7 ± 2.6	15.4 ± 3.9	11.9 ± 3.7	7.8 ± 3.1	4.5 ± 1.5	22.9 ± 8.3	20.3 ± 9.3	44.7 ± 6.4	29.3 ± 4.4
White fir	0.6 ± 0.6	0.3 ± 0.3	0.0	0.0	0.0	0.0	0.0	0.0	2.2 ± 0.9	3.3 ± 1.4
Aspen	5.9 ± 1.9	6.3 ± 2.1	6.8 ± 1.9	10.0 ± 3.5	4.1 ± 1.4	5.8 ± 2.1	11.4 ± 2.8	14.0 ± 4.3	8.1 ± 2.6	10.4 ± 4.5
Total nonhost	56.4 ± 7.8	69.0 ± 10.1	42.9 ± 5.4	62.3 ± 8.5	25.3 ± 5.2	39.9 ± 8.7	65.7 ± 10.3	96.7 ± 15.5	62.5 ± 7.6	58.5 ± 7.7
Total stand	156.9	185.2 ± 17.7	192.5	221.9 ± 16.3	182.5	239.1 ± 17.1	217.6	302.6 ± 32.2	160	180.8 ± 16.0

[1]Square feet of basal area per acre ± one stand error.
[2]Number of trees per acre ± one standard error.

TABLE 3

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
DIAMOND BUTTE FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 92 PLOTS, AND REPRESENT AN AREA OF 3403. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

NUMBERS OF TREES PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	7.174	.000	.000	.000	.000	.000	.000	.000	7.174	6.172
6.0- 6.9	11.625	.000	.000	.000	.000	.000	.000	.000	11.625	10.002
7.0- 7.9	9.761	.000	.000	1.220	.000	.000	1.220	11.111	10.981	9.448
8.0- 8.9	12.144	.000	.000	.934	.000	.000	.934	7.143	13.078	11.252
9.0- 9.9	6.643	.738	.000	.738	.000	.000	1.476	18.182	8.119	6.985
10.0- 10.9	8.370	.000	.000	.000	.000	.000	.000	.000	8.370	7.201
11.0- 11.9	8.388	.494	.494	.000	.000	.000	.988	9.524	10.376	8.927
12.0- 12.9	5.397	1.246	.000	.000	.000	.000	1.246	18.750	6.643	5.715
13.0- 13.9	4.245	.354	.354	.708	.000	.000	1.415	25.000	5.660	4.870
14.0- 14.9	4.270	.305	.305	.000	.000	.000	.610	12.500	4.881	4.199
15.0- 15.9	3.189	.531	.000	.531	.000	.000	1.063	25.000	4.252	3.658
16.0- 16.9	3.270	.934	.234	.467	.000	.000	1.635	33.333	4.904	4.219
17.0- 17.9	2.069	.207	.414	.828	.000	.000	1.448	41.176	3.517	3.026
18.0- 18.9	3.137	.185	.185	.369	.185	.000	.923	22.727	4.060	3.493
19.0- 19.9	1.491	.000	.331	.662	.000	.000	.994	40.000	2.484	2.137
20.0- 20.9	1.644	.000	.000	.299	.000	.000	.299	15.385	1.943	1.672
21.0- 21.9	1.270	.000	.136	.678	.000	.000	.813	40.000	2.034	1.750
22.0- 22.9	.865	.124	.000	.371	.000	.000	.494	36.364	1.359	1.169
23.0- 23.9	1.017	.113	.113	.113	.000	.000	.339	25.000	1.356	1.167
24.0- 24.9	.519	.000	.104	.623	.000	.000	.727	58.333	1.246	1.072
25.0- 25.9	.383	.000	.096	.096	.000	.000	.191	33.333	.574	.494
26.0- 26.9	.442	.000	.088	.177	.000	.000	.265	37.500	.708	.609
27.0- 27.9	.082	.000	.000	.246	.000	.000	.246	75.000	.328	.282
28.0- 28.9	.153	.000	.000	.076	.000	.000	.076	33.333	.229	.197
29.0- 29.9	.000	.000	.000	.071	.000	.000	.071	100.000	.071	.061
30.0- 30.9	.066	.000	.000	.000	.000	.000	.000	.000	.066	.057
31.0- 31.9	.062	.000	.000	.000	.000	.000	.000	.000	.062	.054
32.0- 32.9	.000	.000	.000	.058	.000	.000	.058	100.000	.058	.050
36.0- 36.9	.000	.000	.000	.046	.000	.000	.046	100.000	.046	.040
46.0- 46.9	.000	.000	.000	.028	.000	.000	.028	100.000	.028	.024
TOTAL	98.63	5.23	2.85	9.34	.18	.00	17.61	15.15	116.23	100.00
PERCENT	84.85	4.50	2.45	8.04	.16	.00	15.15			

Table 4

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
DIAMOND BUTTE FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 92 PLOTS, AND REPRESENT AN AREA OF 3483.ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	.978	.000	.000	.000	.000	.000	.000	.000	.978	.974
6.0- 6.9	2.283	.000	.000	.000	.000	.000	.000	.000	2.283	2.273
7.0- 7.9	2.609	.000	.000	.326	.000	.000	.326	11.111	2.935	2.922
8.0- 8.9	4.239	.000	.000	.326	.000	.000	.326	7.143	4.565	4.545
9.0- 9.9	2.935	.326	.000	.326	.000	.000	.652	18.182	3.587	3.571
10.0- 10.9	4.565	.000	.000	.000	.000	.000	.000	.000	4.565	4.545
11.0- 11.9	6.196	.326	.326	.000	.000	.000	.652	9.524	6.848	6.818
12.0- 12.9	4.239	.978	.000	.000	.000	.000	.978	18.750	5.217	5.195
13.0- 13.9	3.913	.326	.326	.652	.000	.000	1.304	25.000	5.217	5.195
14.0- 14.9	4.565	.326	.326	.000	.000	.000	.652	12.500	5.217	5.195
15.0- 15.9	3.913	.652	.000	.652	.000	.000	1.304	25.000	5.217	5.195
16.0- 16.9	4.565	1.304	.326	.652	.000	.000	2.283	33.333	6.848	6.818
17.0- 17.9	3.261	.326	.652	1.304	.000	.000	2.283	41.176	5.543	5.519
18.0- 18.9	5.543	.326	.326	.652	.326	.000	1.630	22.727	7.174	7.143
19.0- 19.9	2.935	.000	.652	1.304	.000	.000	1.957	40.000	4.891	4.870
20.0- 20.9	3.587	.000	.000	.652	.000	.000	.652	15.385	4.239	4.221
21.0- 21.9	2.935	.000	.326	1.630	.000	.000	1.957	40.000	4.891	4.870
22.0- 22.9	2.283	.326	.000	.978	.000	.000	1.304	36.364	3.587	3.571
23.0- 23.9	2.935	.326	.326	.326	.000	.000	.978	25.000	3.913	3.896
24.0- 24.9	1.630	.000	.326	1.957	.000	.000	2.283	58.333	3.913	3.896
25.0- 25.9	1.304	.000	.326	.326	.000	.000	.652	33.333	1.957	1.948
26.0- 26.9	1.630	.000	.326	.652	.000	.000	.978	37.500	2.609	2.597
27.0- 27.9	.326	.000	.000	.978	.000	.000	.978	75.000	1.304	1.299
28.0- 28.9	.652	.000	.000	.326	.000	.000	.326	33.333	.978	.974
29.0- 29.9	.000	.000	.000	.326	.000	.000	.326	100.000	.326	.325
30.0- 30.9	.326	.000	.000	.000	.000	.000	.000	.000	.326	.325
31.0- 31.9	.326	.000	.000	.000	.000	.000	.000	.000	.326	.325
32.0- 32.9	.000	.000	.000	.326	.000	.000	.326	100.000	.326	.325
36.0- 36.9	.000	.000	.000	.326	.000	.000	.326	100.000	.326	.325
46.0- 46.9	.000	.000	.000	.326	.000	.000	.326	100.000	.326	.325
TOTAL	74.67	5.54	4.57	15.33	.33	.00	25.76	25.65	100.43	100.00
PERCENT	74.35	5.52	4.55	15.26	.32	.00	25.65			

TABLE 5

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
DIAMOND BUTTE FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 92 PLOTS, AND REPRESENT AN AREA OF 3483.ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

NUMBERS OF TREES PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
6.0- 6.9	6.643	.000	.000	.000	.000	6.643	9.631
7.0- 7.9	6.101	2.440	.000	.000	.000	8.541	12.382
8.0- 8.9	7.473	.000	.000	.934	.000	8.408	12.189
9.0- 9.9	5.167	.000	.000	.000	.000	5.167	7.491
10.0- 10.9	7.174	.598	.000	.598	.000	8.370	12.135
11.0- 11.9	4.447	.494	.000	.494	.000	5.435	7.880
12.0- 12.9	2.491	.415	.000	.415	.000	3.321	4.815
13.0- 13.9	4.245	.000	.000	.000	.000	4.245	6.155
14.0- 14.9	2.745	.915	.000	2.440	.000	6.101	8.845
15.0- 15.9	1.063	.531	.000	.266	.000	1.860	2.697
16.0- 16.9	1.168	.467	.000	.934	.000	2.569	3.724
17.0- 17.9	1.448	.414	.207	.207	.000	2.276	3.299
18.0- 18.9	.369	.000	.000	.000	.000	.369	.535
19.0- 19.9	.994	.000	.000	.000	.000	.994	1.441
20.0- 20.9	.747	.598	.000	.000	.000	1.345	1.950
21.0- 21.9	.813	.407	.000	.000	.000	1.220	1.769
22.0- 22.9	.000	.247	.000	.000	.000	.247	.358
23.0- 23.9	.226	.000	.000	.000	.000	.226	.328
24.0- 24.9	.000	.208	.000	.000	.000	.208	.301
25.0- 25.9	.000	.287	.000	.000	.000	.287	.416
26.0- 26.9	.088	.177	.000	.000	.000	.265	.385
27.0- 27.9	.082	.164	.000	.000	.000	.246	.357
28.0- 28.9	.076	.000	.000	.000	.000	.076	.111
30.0- 30.9	.066	.133	.066	.000	.000	.266	.385
31.0- 31.9	.000	.062	.000	.000	.000	.062	.090
32.0- 32.9	.000	.058	.000	.000	.000	.058	.085
33.0- 33.9	.055	.000	.000	.000	.000	.055	.080
38.0- 38.9	.000	.041	.000	.000	.000	.041	.060
39.0- 39.9	.000	.039	.000	.000	.000	.039	.057
41.0- 41.9	.036	.000	.000	.000	.000	.036	.052
TOTAL	53.72	8.70	.27	6.29	.00	68.98	22.12
PERCENT	77.88	12.61	.40	9.12	.00	100.00	

Table 6

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
DIAMOND BUTTE FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 92 PLOTS, AND REPRESENT AN AREA OF 3483. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

SQ. FT. OF BASAL AREA PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
6.0- 6.9	1.304	.000	.000	.000	.000	1.304	2.312
7.0- 7.9	1.630	.652	.000	.000	.000	2.283	4.046
8.0- 8.9	2.609	.000	.000	.326	.000	2.935	5.202
9.0- 9.9	2.283	.000	.000	.000	.000	2.283	4.046
10.0- 10.9	3.913	.326	.000	.326	.000	4.565	8.092
11.0- 11.9	2.935	.326	.000	.326	.000	3.587	6.358
12.0- 12.9	1.957	.326	.000	.326	.000	2.609	4.624
13.0- 13.9	3.913	.000	.000	.000	.000	3.913	6.936
14.0- 14.9	2.935	.978	.000	2.609	.000	6.522	11.561
15.0- 15.9	1.304	.652	.000	.326	.000	2.283	4.046
16.0- 16.9	1.630	.652	.000	1.304	.000	3.587	6.358
17.0- 17.9	2.283	.652	.326	.326	.000	3.587	6.358
18.0- 18.9	.652	.000	.000	.000	.000	.652	1.156
19.0- 19.9	1.957	.000	.000	.000	.000	1.957	3.468
20.0- 20.9	1.630	1.304	.000	.000	.000	2.935	5.202
21.0- 21.9	1.957	.978	.000	.000	.000	2.935	5.202
22.0- 22.9	.000	.652	.000	.000	.000	.652	1.156
23.0- 23.9	.652	.000	.000	.000	.000	.652	1.156
24.0- 24.9	.000	.652	.000	.000	.000	.652	1.156
25.0- 25.9	.000	.978	.000	.000	.000	.978	1.734
26.0- 26.9	.326	.652	.000	.000	.000	.978	1.734
27.0- 27.9	.326	.652	.000	.000	.000	.978	1.734
28.0- 28.9	.326	.000	.000	.000	.000	.326	.578
30.0- 30.9	.326	.652	.326	.000	.000	1.304	2.312
31.0- 31.9	.000	.326	.000	.000	.000	.326	.578
32.0- 32.9	.000	.326	.000	.000	.000	.326	.578
33.0- 33.9	.326	.000	.000	.000	.000	.326	.578
38.0- 38.9	.000	.326	.000	.000	.000	.326	.578
39.0- 39.9	.000	.326	.000	.000	.000	.326	.578
41.0- 41.9	.326	.000	.000	.000	.000	.326	.578
TOTAL	37.50	12.39	.65	5.87	.00	56.41	.00
PERCENT	66.47	21.97	1.16	10.40	.00	100.00	

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 7

POPULATION STAND TABLE
MT. ORD FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 154 PLOTS, AND REPRESENT AN AREA OF 6396. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

NUMBERS OF TREES PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	8.572	.000	.000	.000	.000	.000	.000	.000	8.572	5.338
6.0- 6.9	12.698	.000	.000	1.984	.000	.000	1.984	13.333	14.882	9.267
7.0- 7.9	15.307	.000	.000	1.458	.000	.000	1.458	8.696	16.765	10.439
8.0- 8.9	11.162	.000	.000	.558	.000	.000	.558	4.762	11.720	7.298
9.0- 9.9	12.347	.000	.000	1.323	.000	.000	1.323	9.677	13.669	8.512
10.0- 10.9	7.501	.000	.000	.357	.000	.000	.357	4.545	7.858	4.893
11.0- 11.9	11.512	.295	.295	.295	.000	.000	.886	7.143	12.398	7.720
12.0- 12.9	10.665	.248	.000	.992	.000	.000	1.240	10.417	11.906	7.414
13.0- 13.9	8.665	.000	.000	.423	.000	.000	.423	4.651	9.088	5.659
14.0- 14.9	6.014	.364	.000	.911	.182	.000	1.458	19.512	7.471	4.652
15.0- 15.9	6.826	.159	.000	1.270	.000	.000	1.429	17.308	8.255	5.140
16.0- 16.9	4.883	.140	.000	.698	.140	.000	.977	16.667	5.860	3.649
17.0- 17.9	5.561	.000	.124	.742	.000	.000	.865	13.462	6.427	4.002
18.0- 18.9	4.961	.000	.331	.551	.220	.000	1.102	18.182	6.063	3.775
19.0- 19.9	3.166	.099	.297	.396	.000	.000	.792	20.000	3.958	2.464
20.0- 20.9	2.679	.000	.179	.536	.089	.000	.804	23.077	3.482	2.168
21.0- 21.9	2.592	.000	.000	.324	.000	.000	.324	11.111	2.916	1.816
22.0- 22.9	1.992	.074	.074	.295	.000	.000	.443	18.182	2.435	1.516
23.0- 23.9	1.148	.000	.000	.473	.000	.000	.473	29.167	1.620	1.009
24.0- 24.9	1.116	.000	.000	.248	.000	.000	.248	18.182	1.364	.849
25.0- 25.9	.629	.000	.114	.743	.000	.000	.857	57.692	1.486	.925
26.0- 26.9	.211	.000	.053	.159	.000	.000	.211	50.000	.423	.263
27.0- 27.9	.490	.000	.000	.245	.049	.000	.294	37.500	.784	.488
28.0- 28.9	.273	.000	.000	.091	.000	.000	.091	25.000	.364	.227
29.0- 29.9	.042	.000	.000	.127	.000	.000	.127	75.000	.170	.106
30.0- 30.9	.119	.000	.000	.040	.000	.000	.040	25.000	.159	.099
31.0- 31.9	.037	.000	.000	.149	.000	.000	.149	80.000	.186	.116
32.0- 32.9	.105	.000	.000	.070	.000	.000	.070	40.000	.174	.109
33.0- 33.9	.033	.000	.000	.000	.000	.000	.000	.000	.033	.020
35.0- 35.9	.058	.000	.000	.029	.000	.000	.029	33.333	.087	.054
42.0- 42.9	.020	.000	.000	.000	.000	.000	.000	.000	.020	.013
TOTAL	141.58	1.38	1.47	15.49	.68	.00	19.01	11.84	160.59	100.00
PERCENT	88.16	.86	.91	9.64	.42	.00	11.84			

Table 8

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
MT. ORD FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 154 PLOTS, AND REPRESENT AN AREA OF 8396. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

SQ. FT. OF BASAL AREA PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	1.169	.000	.000	.000	.000	.000	.000	.000	1.169	.781
6.0- 6.9	2.532	.000	.000	.390	.000	.000	.390	13.333	2.922	1.953
7.0- 7.9	4.091	.000	.000	.390	.000	.000	.390	8.696	4.481	2.995
8.0- 8.9	3.896	.000	.000	.195	.000	.000	.195	4.762	4.091	2.734
9.0- 9.9	5.455	.000	.000	.584	.000	.000	.584	9.677	6.039	4.036
10.0- 10.9	4.091	.000	.000	.195	.000	.000	.195	4.545	4.286	2.865
11.0- 11.9	7.597	.195	.195	.195	.000	.000	.584	7.143	8.182	5.469
12.0- 12.9	8.377	.195	.000	.779	.000	.000	.974	10.417	9.351	6.250
13.0- 13.9	7.987	.000	.000	.390	.000	.000	.390	4.651	8.377	5.599
14.0- 14.9	6.429	.390	.000	.974	.195	.000	1.558	19.512	7.987	5.339
15.0- 15.9	8.377	.195	.000	1.558	.000	.000	1.753	17.308	10.130	6.771
16.0- 16.9	6.818	.195	.000	.974	.195	.000	1.364	16.667	8.182	5.469
17.0- 17.9	8.766	.000	.195	1.169	.000	.000	1.364	13.462	10.130	6.771
18.0- 18.9	8.766	.000	.584	.974	.390	.000	1.948	18.182	10.714	7.161
19.0- 19.9	6.234	.195	.584	.779	.000	.000	1.558	20.000	7.792	5.208
20.0- 20.9	5.844	.000	.390	1.169	.195	.000	1.753	23.077	7.597	5.078
21.0- 21.9	6.234	.000	.000	.779	.000	.000	.779	11.111	7.013	4.688
22.0- 22.9	5.260	.195	.195	.779	.000	.000	1.169	18.182	6.429	4.297
23.0- 23.9	3.312	.000	.000	1.364	.000	.000	1.364	29.167	4.675	3.125
24.0- 24.9	3.506	.000	.000	.779	.000	.000	.779	18.182	4.286	2.865
25.0- 25.9	2.143	.000	.390	2.532	.000	.000	2.922	57.692	5.065	3.385
26.0- 26.9	.779	.000	.195	.584	.000	.000	.779	50.000	1.558	1.042
27.0- 27.9	1.948	.000	.000	.974	.195	.000	1.169	37.500	3.117	2.083
28.0- 28.9	1.169	.000	.000	.390	.000	.000	.390	25.000	1.558	1.042
29.0- 29.9	.195	.000	.000	.584	.000	.000	.584	75.000	.779	.521
30.0- 30.9	.584	.000	.000	.195	.000	.000	.195	25.000	.779	.521
31.0- 31.9	.195	.000	.000	.779	.000	.000	.779	80.000	.974	.651
32.0- 32.9	.584	.000	.000	.390	.000	.000	.390	40.000	.974	.651
33.0- 33.9	.195	.000	.000	.000	.000	.000	.000	.000	.195	.130
35.0- 35.9	.390	.000	.000	.195	.000	.000	.195	33.333	.584	.391
42.0- 42.9	.195	.000	.000	.000	.000	.000	.000	.000	.195	.130
TOTAL	123.12	1.56	2.73	21.04	1.17	.00	26.49	17.71	149.61	100.00
PERCENT	82.29	1.04	1.82	14.06	.78	.00	17.71			

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 9

POPULATION STAND TABLE
MT. OKO FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 154 PLOTS, AND REPRESENT AN AREA OF 6396.1 ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

NUMBERS OF TREES PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	2.857	.000	.000	1.429	.000	4.286	6.996
6.0- 6.9	4.961	.992	.000	.000	.000	5.953	9.716
7.0- 7.9	5.102	2.187	.000	.729	.000	8.018	13.087
8.0- 8.9	6.697	.558	.000	1.116	.000	8.371	13.663
9.0- 9.9	3.969	.441	.000	.441	.000	4.850	7.917
10.0- 10.9	3.929	.357	.000	.357	.000	4.643	7.578
11.0- 11.9	3.247	.886	.000	1.476	.000	5.608	9.154
12.0- 12.9	3.224	.496	.000	.992	.000	4.713	7.692
13.0- 13.9	1.268	.423	.000	1.268	.000	2.959	4.829
14.0- 14.9	1.093	.364	.000	1.458	.000	2.916	4.759
15.0- 15.9	1.270	.635	.000	.317	.000	2.222	3.627
16.0- 16.9	.698	.279	.000	.279	.000	1.256	2.049
17.0- 17.9	.371	.989	.000	.000	.000	1.359	2.219
18.0- 18.9	.110	.441	.000	.000	.000	.551	.900
19.0- 19.9	.198	.297	.000	.099	.000	.594	.969
20.0- 20.9	.000	.269	.000	.000	.000	.268	.437
21.0- 21.9	.081	.324	.000	.000	.000	.405	.661
22.0- 22.9	.000	.443	.000	.000	.000	.443	.723
23.0- 23.9	.068	.405	.000	.000	.000	.473	.771
24.0- 24.9	.000	.248	.000	.062	.000	.310	.506
25.0- 25.9	.171	.114	.000	.000	.000	.286	.466
26.0- 26.9	.000	.211	.000	.000	.000	.211	.345
27.0- 27.9	.000	.245	.000	.000	.000	.245	.400
28.0- 28.9	.000	.091	.000	.000	.000	.091	.149
29.0- 29.9	.000	.170	.000	.000	.000	.170	.277
30.0- 30.9	.000	.040	.000	.000	.000	.040	.065
36.0- 36.9	.000	.028	.000	.000	.000	.028	.045
TOTAL	39.31	11.93	.00	10.02	.00	61.27	35.83
PERCENT	64.17	19.47	.00	16.36	.00	100.00	

Table 10

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
MT. ORD FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 154 PLOTS, AND REPRESENT AN AREA OF 6396. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	.390	.000	.000	.195	.000	.584	1.364
6.0- 6.9	.974	.195	.000	.000	.000	1.169	2.727
7.0- 7.9	1.364	.584	.000	.195	.000	2.143	5.000
8.0- 8.9	2.338	.195	.000	.390	.000	2.922	6.818
9.0- 9.9	1.753	.195	.000	.195	.000	2.143	5.000
10.0- 10.9	2.143	.195	.000	.195	.000	2.532	5.909
11.0- 11.9	2.143	.584	.000	.974	.000	3.701	8.636
12.0- 12.9	2.532	.390	.000	.779	.000	3.701	8.636
13.0- 13.9	1.169	.390	.000	1.169	.000	2.727	6.364
14.0- 14.9	1.169	.390	.000	1.558	.000	3.117	7.273
15.0- 15.9	1.558	.779	.000	.390	.000	2.727	6.364
16.0- 16.9	.974	.390	.000	.390	.000	1.753	4.091
17.0- 17.9	.584	1.558	.000	.000	.000	2.143	5.000
18.0- 18.9	.195	.779	.000	.000	.000	.974	2.273
19.0- 19.9	.390	.584	.000	.195	.000	1.169	2.727
20.0- 20.9	.000	.584	.000	.000	.000	.584	1.364
21.0- 21.9	.195	.779	.000	.000	.000	.974	2.273
22.0- 22.9	.000	1.169	.000	.000	.000	1.169	2.727
23.0- 23.9	.195	1.169	.000	.000	.000	1.364	3.182
24.0- 24.9	.000	.779	.000	.195	.000	.974	2.273
25.0- 25.9	.584	.390	.000	.000	.000	.974	2.273
26.0- 26.9	.000	.779	.000	.000	.000	.779	1.818
27.0- 27.9	.000	.974	.000	.000	.000	.974	2.273
28.0- 28.9	.000	.390	.000	.000	.000	.390	.909
29.0- 29.9	.000	.779	.000	.000	.000	.779	1.818
30.0- 30.9	.000	.195	.000	.000	.000	.195	.455
36.0- 36.9	.000	.195	.000	.000	.000	.195	.455
TOTAL	20.65	15.39	.00	6.82	.00	42.86	.00
PERCENT	48.18	35.91	.00	15.91	.00	100.00	

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 11

POPULATION STAND TABLE
BULL CIENEGA FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS, AND REPRESENT AN AREA OF 4010. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

NUMBERS OF TREES PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	20.626	.000	.000	.000	.000	.000	.000	.000	20.626	10.355
6.0- 6.9	19.099	.000	.000	.000	.000	.000	.000	.000	19.099	9.588
7.0- 7.9	11.693	.000	.000	1.169	.000	.000	1.169	9.091	12.862	6.457
8.0- 8.9	17.010	.000	.000	1.790	.000	.000	1.790	9.524	18.800	9.438
9.0- 9.9	15.562	.707	.000	1.415	.000	.000	2.122	12.000	17.684	8.878
10.0- 10.9	18.908	.000	1.146	1.146	.000	.000	2.292	10.811	21.199	10.643
11.0- 11.9	12.785	.000	.947	.947	.000	.000	1.894	12.903	14.679	7.369
12.0- 12.9	8.754	.000	.000	.398	.000	.000	.398	4.348	9.151	4.594
13.0- 13.9	11.866	.000	.000	1.356	.000	.000	1.356	10.256	13.222	6.638
14.0- 14.9	8.770	.877	.000	.000	.000	.000	.877	9.091	9.647	4.843
15.0- 15.9	6.112	.764	.255	1.273	.000	.000	2.292	27.273	8.403	4.219
16.0- 16.9	4.476	.448	.000	1.343	.000	.000	1.790	28.571	6.267	3.146
17.0- 17.9	4.362	.000	.397	.198	.000	.000	.595	12.000	4.956	2.488
18.0- 18.9	4.775	.177	.000	.884	.000	.000	1.061	18.182	5.836	2.930
19.0- 19.9	3.174	.000	.000	1.428	.000	.000	1.428	31.034	4.603	2.311
20.0- 20.9	1.432	.000	.143	.143	.000	.000	.286	16.667	1.719	.863
21.0- 21.9	1.949	.000	.000	.520	.000	.000	.520	21.053	2.469	1.239
22.0- 22.9	1.539	.237	.116	.592	.000	.000	.947	38.095	2.486	1.248
23.0- 23.9	1.083	.217	.000	.433	.000	.000	.650	37.500	1.733	.870
24.0- 24.9	.696	.099	.000	.199	.000	.000	.298	30.000	.995	.499
25.0- 25.9	.642	.000	.000	.367	.000	.000	.367	36.364	1.008	.506
26.0- 26.9	.170	.085	.000	.085	.085	.000	.254	60.000	.424	.213
27.0- 27.9	.157	.000	.000	.079	.000	.000	.079	33.333	.236	.118
28.0- 28.9	.073	.000	.000	.219	.000	.000	.219	75.000	.292	.147
29.0- 29.9	.273	.000	.000	.068	.000	.000	.068	20.000	.341	.171
30.0- 30.9	.000	.000	.000	.127	.000	.000	.127	100.000	.127	.064
31.0- 31.9	.119	.000	.000	.000	.000	.000	.000	.000	.119	.060
32.0- 32.9	.000	.000	.000	.056	.056	.000	.112	100.000	.112	.056
33.0- 33.9	.000	.000	.000	.053	.000	.000	.053	100.000	.053	.026
35.0- 35.9	.047	.000	.000	.000	.000	.000	.000	.000	.047	.023
TOTAL	176.15	3.61	3.01	16.29	.14	.00	23.05	11.57	199.20	100.00
PERCENT	88.43	1.81	1.51	8.18	.07	.00	11.57			

Table 12

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
BULL CIENEGA FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS. AND

REPRESENT AN AREA OF 4010. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	2.813	.000	.000	.000	.000	.000	.000	.000	2.813	1.789
6.0- 6.9	3.750	.000	.000	.000	.000	.000	.000	.000	3.750	2.386
7.0- 7.9	3.125	.000	.000	.313	.000	.000	.313	9.091	3.438	2.187
8.0- 8.9	5.938	.000	.000	.625	.000	.000	.625	9.524	6.563	4.175
9.0- 9.9	6.875	.313	.000	.625	.000	.000	.938	12.000	7.813	4.970
10.0- 10.9	10.313	.000	.625	.625	.000	.000	1.250	10.811	11.563	7.356
11.0- 11.9	8.438	.000	.625	.625	.000	.000	1.250	12.903	9.688	6.163
12.0- 12.9	6.875	.000	.000	.313	.000	.000	.313	4.348	7.188	4.573
13.0- 13.9	10.938	.000	.000	1.250	.000	.000	1.250	10.256	12.188	7.753
14.0- 14.9	9.375	.938	.000	.000	.000	.000	.938	9.091	10.313	6.561
15.0- 15.9	7.500	.938	.313	1.563	.000	.000	2.813	27.273	10.313	6.561
16.0- 16.9	6.250	.625	.000	1.875	.000	.000	2.500	28.571	8.750	5.567
17.0- 17.9	6.875	.000	.625	.313	.000	.000	.938	12.000	7.813	4.970
18.0- 18.9	8.438	.313	.000	1.563	.000	.000	1.875	18.182	10.313	6.561
19.0- 19.9	6.250	.000	.000	2.813	.000	.000	2.813	31.034	9.063	5.765
20.0- 20.9	3.125	.000	.313	.313	.000	.000	.625	16.667	3.750	2.386
21.0- 21.9	4.688	.000	.000	1.250	.000	.000	1.250	21.053	5.938	3.777
22.0- 22.9	4.063	.625	.313	1.563	.000	.000	2.500	38.095	6.563	4.175
23.0- 23.9	3.125	.625	.000	1.250	.000	.000	1.875	37.500	5.000	3.181
24.0- 24.9	2.188	.313	.000	.625	.000	.000	.938	30.000	3.125	1.988
25.0- 25.9	2.188	.000	.000	1.250	.000	.000	1.250	36.364	3.438	2.187
26.0- 26.9	.625	.313	.000	.313	.313	.000	.938	60.000	1.563	.994
27.0- 27.9	.625	.000	.000	.313	.000	.000	.313	33.333	.938	.596
28.0- 28.9	.313	.000	.000	.938	.000	.000	.938	75.000	1.250	.795
29.0- 29.9	1.250	.000	.000	.313	.000	.000	.313	20.000	1.563	.994
30.0- 30.9	.000	.000	.000	.625	.000	.000	.625	100.000	.625	.398
31.0- 31.9	.625	.000	.000	.000	.000	.000	.000	.000	.625	.398
32.0- 32.9	.000	.000	.000	.313	.313	.000	.625	100.000	.625	.398
33.0- 33.9	.000	.000	.000	.313	.000	.000	.313	100.000	.313	.199
35.0- 35.9	.313	.000	.000	.000	.000	.000	.000	.000	.313	.199
TOTAL	126.88	5.00	2.81	21.88	.63	.00	30.31	19.28	157.19	100.00
PERCENT	80.72	3.18	1.79	13.92	.40	.00	19.28			

Table 13

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
BULL CIENEGA FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS, AND REPRESENT AN AREA OF 4010. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

NUMBERS OF TREES PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	6.875	.000	.000	.000	.000	6.875	17.226
7.0- 7.9	7.016	.000	.000	.000	.000	7.016	17.578
8.0- 8.9	3.581	.000	.000	1.790	.000	5.371	13.458
9.0- 9.9	2.829	.000	.000	.707	.000	3.537	8.861
10.0- 10.9	2.865	.000	.000	.573	.000	3.438	8.613
11.0- 11.9	2.368	.947	.000	.000	.000	3.315	8.305
12.0- 12.9	1.592	.000	.000	1.592	.000	3.183	7.975
13.0- 13.9	.339	1.017	.000	.000	.000	1.356	3.398
14.0- 14.9	.292	.292	.000	.292	.000	.877	2.197
15.0- 15.9	.764	.255	.000	.255	.000	1.273	3.190
16.0- 16.9	.224	.224	.000	.000	.000	.448	1.122
17.0- 17.9	.198	.198	.000	.397	.000	.793	1.987
18.0- 18.9	.177	.000	.000	.177	.000	.354	.886
19.0- 19.9	.317	.159	.000	.000	.000	.476	1.193
20.0- 20.9	.143	.143	.000	.000	.000	.286	.718
21.0- 21.9	.000	.130	.000	.000	.000	.130	.326
23.0- 23.9	.000	.217	.000	.000	.000	.217	.543
24.0- 24.9	.000	.298	.000	.000	.000	.298	.748
25.0- 25.9	.000	.092	.000	.000	.000	.092	.230
26.0- 26.9	.085	.170	.000	.000	.000	.254	.637
27.0- 27.9	.000	.157	.000	.000	.000	.157	.394
30.0- 30.9	.000	.064	.000	.000	.000	.064	.160
32.0- 32.9	.000	.056	.000	.000	.000	.056	.140
35.0- 35.9	.000	.047	.000	.000	.000	.047	.117
TOTAL	29.67	4.46	.00	5.78	.00	39.91	25.67
PERCENT	74.33	11.19	.00	14.49	.00	100.00	

Table 14

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
BULL CIENEGA FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 90 PLOTS, AND REPRESENT AN AREA OF 4010. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	.938	.000	.000	.000	.000	.938	3.704
7.0- 7.9	1.875	.000	.000	.000	.000	1.875	7.407
8.0- 8.9	1.250	.000	.000	.625	.000	1.875	7.407
9.0- 9.9	1.250	.000	.000	.313	.000	1.563	6.173
10.0- 10.9	1.563	.000	.000	.313	.000	1.875	7.407
11.0- 11.9	1.563	.625	.000	.000	.000	2.188	8.642
12.0- 12.9	1.250	.000	.000	1.250	.000	2.500	9.877
13.0- 13.9	.313	.938	.000	.000	.000	1.250	4.938
14.0- 14.9	.313	.313	.000	.313	.000	.938	3.704
15.0- 15.9	.938	.313	.000	.313	.000	1.563	6.173
16.0- 16.9	.313	.313	.000	.000	.000	.625	2.469
17.0- 17.9	.313	.313	.000	.625	.000	1.250	4.938
18.0- 18.9	.313	.000	.000	.313	.000	.625	2.469
19.0- 19.9	.625	.313	.000	.000	.000	.938	3.704
20.0- 20.9	.313	.313	.000	.000	.000	.625	2.469
21.0- 21.9	.000	.313	.000	.000	.000	.313	1.235
23.0- 23.9	.000	.625	.000	.000	.000	.625	2.469
24.0- 24.9	.000	.938	.000	.000	.000	.938	3.704
25.0- 25.9	.000	.313	.000	.000	.000	.313	1.235
26.0- 26.9	.313	.625	.000	.000	.000	.938	3.704
27.0- 27.9	.000	.625	.000	.000	.000	.625	2.469
30.0- 30.9	.000	.313	.000	.000	.000	.313	1.235
32.0- 32.9	.000	.313	.000	.000	.000	.313	1.235
35.0- 35.9	.000	.313	.000	.000	.000	.313	1.235
TOTAL	13.44	7.81	.00	4.06	.00	25.31	.00
PERCENT	53.09	30.86	.00	16.05	.00	100.00	

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 15

POPULATION STAND TABLE
SUNRISE FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 63 PLOTS, AND REPRESENT AN AREA OF 2819.ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

NUMBERS OF TREES PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TIL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	20.954	.000	.000	.000	.000	.000	.000	.000	20.954	10.176
6.0- 6.9	24.252	.000	.000	.000	.000	.000	.000	.000	24.252	11.778
7.0- 7.9	21.382	.000	.000	.000	.000	.000	.000	.000	21.382	10.384
8.0- 8.9	17.734	.000	.000	1.364	.000	.000	1.364	7.143	19.099	9.275
9.0- 9.9	16.166	.000	.000	1.078	.000	1.078	1.078	5.882	18.324	8.899
10.0- 10.9	13.096	.000	.000	1.746	.000	.000	1.746	11.765	14.842	7.208
11.0- 11.9	7.937	.000	.000	.722	.000	.000	.722	8.333	8.659	4.205
12.0- 12.9	9.701	.000	.000	1.213	.000	.000	1.213	11.111	10.913	5.300
13.0- 13.9	11.366	.000	.000	.000	.000	.000	.000	.000	11.366	5.520
14.0- 14.9	10.691	.000	.000	1.782	.000	.000	1.782	14.286	12.473	6.057
15.0- 15.9	10.865	.000	.000	.000	.000	.000	.000	.000	10.865	5.277
16.0- 16.9	8.185	.000	.000	.341	.000	.000	.341	4.000	8.526	4.141
17.0- 17.9	5.136	.000	.000	.000	.302	.000	.302	5.556	5.438	2.641
18.0- 18.9	4.312	.000	.000	.000	.000	.000	.000	.000	4.312	2.094
19.0- 19.9	4.111	.000	.000	.000	.000	.000	.000	.000	4.111	1.997
20.0- 20.9	3.274	.000	.000	.000	.000	.000	.000	.000	3.274	1.590
21.0- 21.9	1.188	.000	.000	.396	.000	.000	.396	25.000	1.584	.769
22.0- 22.9	1.082	.000	.000	.180	.180	.000	.361	25.000	1.443	.701
23.0- 23.9	.825	.000	.000	.330	.000	.000	.330	28.571	1.155	.561
24.0- 24.9	1.061	.000	.000	.000	.000	.000	.000	.000	1.061	.515
25.0- 25.9	.559	.140	.000	.000	.000	.000	.140	20.000	.698	.339
26.0- 26.9	.258	.000	.000	.258	.000	.000	.258	50.000	.517	.251
27.0- 27.9	.120	.000	.000	.120	.000	.000	.120	50.000	.240	.116
28.0- 28.9	.334	.000	.000	.000	.000	.000	.000	.000	.334	.162
32.0- 32.9	.000	.000	.085	.000	.000	.000	.085	100.000	.085	.041
TOTAL	194.59	.14	.09	9.53	.48	1.08	10.24	4.97	205.91	100.00
PERCENT	94.50	.07	.04	4.63	.23	.52	4.97			

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 16

POPULATION STAND TABLE
SUNRISE FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 63 PLOTS, AND REPRESENT AN AREA OF 2819. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	2.857	.000	.000	.000	.000	.000	.000	.000	2.857	1.875
6.0- 6.9	4.762	.000	.000	.000	.000	.000	.000	.000	4.762	3.125
7.0- 7.9	5.714	.000	.000	.000	.000	.000	.000	.000	5.714	3.750
8.0- 8.9	6.190	.000	.000	.476	.000	.000	.476	7.143	6.667	4.375
9.0- 9.9	7.143	.000	.000	.476	.000	.476	.476	5.882	8.095	5.313
10.0- 10.9	7.143	.000	.000	.952	.000	.000	.952	11.765	8.095	5.313
11.0- 11.9	5.238	.000	.000	.476	.000	.000	.476	8.333	5.714	3.750
12.0- 12.9	7.619	.000	.000	.952	.000	.000	.952	11.111	8.571	5.625
13.0- 13.9	10.476	.000	.000	.000	.000	.000	.000	.000	10.476	6.875
14.0- 14.9	11.429	.000	.000	1.905	.000	.000	1.905	14.286	13.333	8.750
15.0- 15.9	13.333	.000	.000	.000	.000	.000	.000	.000	13.333	8.750
16.0- 16.9	11.429	.000	.000	.476	.000	.000	.476	4.000	11.905	7.813
17.0- 17.9	8.095	.000	.000	.000	.476	.000	.476	5.556	8.571	5.625
18.0- 18.9	7.619	.000	.000	.000	.000	.000	.000	.000	7.619	5.000
19.0- 19.9	8.095	.000	.000	.000	.000	.000	.000	.000	8.095	5.313
20.0- 20.9	7.143	.000	.000	.000	.000	.000	.000	.000	7.143	4.688
21.0- 21.9	2.857	.000	.000	.952	.000	.000	.952	25.000	3.810	2.500
22.0- 22.9	2.857	.000	.000	.476	.476	.000	.952	25.000	3.810	2.500
23.0- 23.9	2.381	.000	.000	.952	.000	.000	.952	28.571	3.333	2.188
24.0- 24.9	3.333	.000	.000	.000	.000	.000	.000	.000	3.333	2.188
25.0- 25.9	1.905	.476	.000	.000	.000	.000	.476	20.000	2.381	1.563
26.0- 26.9	.952	.000	.000	.952	.000	.000	.952	50.000	1.905	1.250
27.0- 27.9	.476	.000	.000	.476	.000	.000	.476	50.000	.952	.625
28.0- 28.9	1.429	.000	.000	.000	.000	.000	.000	.000	1.429	.938
32.0- 32.9	.000	.000	.476	.000	.000	.000	.476	100.000	.476	.313
TOTAL	140.48	.48	.48	9.52	.95	.48	11.43	7.50	152.38	100.00
PERCENT	92.19	.31	.31	6.25	.63	.31	7.50			

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 17

POPULATION STAND TABLE
SUNRISE FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 63 PLOTS, AND REPRESENT AN AREA OF 2819. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

NUMBERS OF TREES PER ACRE

DBH	CORKBARK	DOUGFIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	3.492	3.492	.000	.000	.000	6.985	7.224
6.0- 6.9	12.126	7.276	.000	4.850	.000	24.252	25.092
7.0- 7.9	8.909	.000	.000	.000	.000	8.909	9.214
8.0- 8.9	4.093	.000	.000	.000	.000	4.093	4.233
9.0- 9.9	14.012	.000	.000	.000	.000	14.012	14.492
10.0- 10.9	4.365	.873	.000	.873	.000	6.112	6.321
11.0- 11.9	3.608	.000	.000	.722	.000	4.329	4.477
12.0- 12.9	2.425	.000	.000	1.213	.000	3.638	3.762
13.0- 13.9	2.066	3.100	.000	1.033	.000	6.199	6.411
14.0- 14.9	1.335	.000	.000	2.227	.445	4.009	4.146
15.0- 15.9	1.940	1.552	.000	.388	.000	3.880	4.013
16.0- 16.9	1.705	.000	.000	.682	.000	2.387	2.469
17.0- 17.9	.906	.000	.000	.604	.000	1.511	1.562
18.0- 18.9	.808	.269	.000	.539	.000	1.617	1.672
19.0- 19.9	.000	.242	.000	.484	.000	.726	.750
21.0- 21.9	.000	.792	.000	.396	.000	1.188	1.228
22.0- 22.9	.000	.180	.000	.000	.000	.180	.187
23.0- 23.9	.165	.825	.000	.000	.000	.990	1.024
25.0- 25.9	.000	.140	.000	.000	.000	.140	.144
26.0- 26.9	.000	.387	.000	.000	.000	.387	.401
28.0- 28.9	.000	.111	.000	.000	.000	.111	.115
29.0- 29.9	.000	.104	.000	.000	.000	.104	.107
30.0- 30.9	.000	.097	.000	.000	.000	.097	.100
31.0- 31.9	.000	.091	.000	.000	.000	.091	.094
33.0- 33.9	.000	.080	.000	.000	.000	.080	.083
35.0- 35.9	.000	.143	.000	.000	.000	.143	.147
36.0- 36.9	.000	.135	.000	.000	.000	.135	.139
39.0- 39.9	.000	.115	.000	.000	.000	.115	.119
40.0- 40.9	.000	.055	.000	.000	.000	.055	.056
41.0- 41.9	.000	.052	.000	.000	.000	.052	.054
42.0- 42.9	.000	.099	.000	.000	.000	.099	.102
48.0- 48.9	.000	.038	.000	.000	.000	.038	.039
50.0-100.9	.000	.030	.000	.000	.000	.030	.031
TOTAL	61.96	20.28	.00	14.01	.45	96.69	35.92
PERCENT	64.08	20.97	.00	14.49	.46	100.00	

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 18

POPULATION STAND TABLE
SUNRISE FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 63 PLOTS. AND REPRESENT AN AREA OF 2819. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	CORKBARK	DOUGFIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	.476	.476	.000	.000	.000	.952	1.449
6.0- 6.9	2.381	1.429	.000	.952	.000	4.762	7.246
7.0- 7.9	2.381	.000	.000	.000	.000	2.381	3.623
8.0- 8.9	1.429	.000	.000	.000	.000	1.429	2.174
9.0- 9.9	6.190	.000	.000	.000	.000	6.190	9.420
10.0- 10.9	2.381	.476	.000	.476	.000	3.333	5.072
11.0- 11.9	2.381	.000	.000	.476	.000	2.857	4.348
12.0- 12.9	1.905	.000	.000	.952	.000	2.857	4.348
13.0- 13.9	1.905	2.857	.000	.952	.000	5.714	8.696
14.0- 14.9	1.429	.000	.000	2.381	.476	4.286	6.522
15.0- 15.9	2.381	1.905	.000	.476	.000	4.762	7.246
16.0- 16.9	2.381	.000	.000	.952	.000	3.333	5.072
17.0- 17.9	1.429	.000	.000	.952	.000	2.381	3.623
18.0- 18.9	1.429	.476	.000	.952	.000	2.857	4.348
19.0- 19.9	.000	.476	.000	.952	.000	1.429	2.174
21.0- 21.9	.000	1.905	.000	.952	.000	2.857	4.348
22.0- 22.9	.000	.476	.000	.000	.000	.476	.725
23.0- 23.9	.476	2.381	.000	.000	.000	2.857	4.348
25.0- 25.9	.000	.476	.000	.000	.000	.476	.725
26.0- 26.9	.000	1.429	.000	.000	.000	1.429	2.174
28.0- 28.9	.000	.476	.000	.000	.000	.476	.725
29.0- 29.9	.000	.476	.000	.000	.000	.476	.725
30.0- 30.9	.000	.476	.000	.000	.000	.476	.725
31.0- 31.9	.000	.476	.000	.000	.000	.476	.725
33.0- 33.9	.000	.476	.000	.000	.000	.476	.725
35.0- 35.9	.000	.952	.000	.000	.000	.952	1.449
36.0- 36.9	.000	.952	.000	.000	.000	.952	1.449
39.0- 39.9	.000	.952	.000	.000	.000	.952	1.449
40.0- 40.9	.000	.476	.000	.000	.000	.476	.725
41.0- 41.9	.000	.476	.000	.000	.000	.476	.725
42.0- 42.9	.000	.952	.000	.000	.000	.952	1.449
48.0- 48.9	.000	.476	.000	.000	.000	.476	.725
50.0-100.9	.000	.476	.000	.000	.000	.476	.725
TOTAL	30.95	22.86	.00	11.43	.48	65.71	.00
PERCENT	47.10	34.78	.00	17.39	.72	100.00	

Table 19

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
BURNT MOUNTAIN FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS, AND REPRESENT AN AREA OF 3374.ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

NUMBERS OF TREES PER ACRE

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	4.584	.000	.000	.000	.000	.000	.000	.000	4.584	3.747
6.0- 6.9	12.732	.000	.000	.000	.000	.000	.000	.000	12.732	10.409
7.0- 7.9	10.524	.000	1.169	2.339	.000	.000	3.508	25.000	14.032	11.471
8.0- 8.9	13.429	.000	.000	.895	.000	.000	.895	6.250	14.324	11.710
9.0- 9.9	5.659	.707	.707	.707	.000	.000	2.122	27.273	7.781	6.361
10.0- 10.9	8.594	.000	.000	.000	.000	.000	.000	.000	8.594	7.026
11.0- 11.9	7.103	.947	.000	.947	.000	.000	1.894	21.053	8.997	7.355
12.0- 12.9	7.958	.398	.398	.796	.000	.000	1.592	16.667	9.549	7.807
13.0- 13.9	5.763	1.695	1.017	1.695	.000	.000	4.407	43.333	10.171	8.315
14.0- 14.9	4.385	.585	.292	.877	.585	.000	2.339	34.783	6.723	5.497
15.0- 15.9	3.056	.509	.509	.764	.255	.000	2.037	40.000	5.093	4.164
16.0- 16.9	2.238	.000	.224	1.119	.000	.000	1.343	37.500	3.581	2.928
17.0- 17.9	1.983	.397	.198	.991	.198	.000	1.784	47.368	3.767	3.080
18.0- 18.9	.707	.707	.177	.884	.000	.000	1.768	71.429	2.476	2.024
19.0- 19.9	1.587	.000	.000	.952	.000	.000	.952	37.500	2.539	2.076
20.0- 20.9	.573	.000	.286	.716	.000	.143	1.003	58.333	1.719	1.405
21.0- 21.9	.390	.130	.000	.780	.000	.000	.909	70.000	1.299	1.062
22.0- 22.9	.118	.000	.118	.474	.000	.000	.592	83.333	.710	.581
23.0- 23.9	.108	.108	.217	.433	.217	.000	.975	90.000	1.083	.885
24.0- 24.9	.199	.099	.099	.199	.000	.000	.398	66.667	.597	.488
25.0- 25.9	.183	.000	.183	.733	.000	.000	.917	83.333	1.100	.899
26.0- 26.9	.085	.000	.085	.085	.000	.000	.170	66.667	.254	.208
27.0- 27.9	.000	.079	.000	.157	.000	.000	.236	100.000	.236	.193
28.0- 28.9	.000	.000	.000	.073	.000	.000	.073	100.000	.073	.060
29.0- 29.9	.136	.000	.000	.000	.000	.000	.000	.000	.136	.111
31.0- 31.9	.000	.000	.000	.119	.000	.000	.119	100.000	.119	.097
34.0- 34.9	.000	.000	.000	.050	.000	.000	.050	100.000	.050	.041
TOTAL	92.09	6.36	5.68	16.79	1.25	.14	30.08	24.59	122.32	100.00
PERCENT	75.29	5.20	4.64	13.72	1.03	.12	24.59			

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 20

POPULATION STAND TABLE
BURNT MOUNTAIN FAIR
HOST SPECIES IS SPRUCE

THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS. AND

REPRESENT AN AREA OF 3374. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES HOST TREES

S Q. F T. O F B A S A L A R E A

P E R A C R E

DBH	GREEN SP	CURR ATT	PREV ATT	OLD ATT	STRIP	GRN BLDN	TTL AK	PERCENT	TOTAL	PERCENTILE
5.0- 5.9	.625	.000	.000	.000	.000	.000	.000	.000	.625	.639
6.0- 6.9	2.500	.000	.000	.000	.000	.000	.000	.000	2.500	2.556
7.0- 7.9	2.813	.000	.313	.625	.000	.000	.938	25.000	3.750	3.834
8.0- 8.9	4.688	.000	.000	.313	.000	.000	.313	6.250	5.000	5.112
9.0- 9.9	2.500	.313	.313	.313	.000	.000	.938	27.273	3.438	3.514
10.0- 10.9	4.688	.000	.000	.000	.000	.000	.000	.000	4.688	4.792
11.0- 11.9	4.688	.625	.000	.625	.000	.000	1.250	21.053	5.938	6.070
12.0- 12.9	6.250	.313	.313	.625	.000	.000	1.250	16.667	7.500	7.668
13.0- 13.9	5.313	1.563	.938	1.563	.000	.000	4.063	43.333	9.375	9.585
14.0- 14.9	4.688	.625	.313	.938	.625	.000	2.500	34.783	7.188	7.348
15.0- 15.9	3.750	.625	.625	.938	.313	.000	2.500	40.000	6.250	6.390
16.0- 16.9	3.125	.000	.313	1.563	.000	.000	1.875	37.500	5.000	5.112
17.0- 17.9	3.125	.625	.313	1.563	.313	.000	2.813	47.368	5.938	6.070
18.0- 18.9	1.250	1.250	.313	1.563	.000	.000	3.125	71.429	4.375	4.473
19.0- 19.9	3.125	.000	.000	1.875	.000	.000	1.875	37.500	5.000	5.112
20.0- 20.9	1.250	.000	.625	1.563	.000	.313	2.188	58.333	3.750	3.834
21.0- 21.9	.938	.313	.000	1.875	.000	.000	2.188	70.000	3.125	3.195
22.0- 22.9	.313	.000	.313	1.250	.000	.000	1.563	83.333	1.875	1.917
23.0- 23.9	.313	.313	.625	1.250	.625	.000	2.813	90.000	3.125	3.195
24.0- 24.9	.625	.313	.313	.625	.000	.000	1.250	66.667	1.875	1.917
25.0- 25.9	.625	.000	.625	2.500	.000	.000	3.125	83.333	3.750	3.834
26.0- 26.9	.313	.000	.313	.313	.000	.000	.625	66.667	.938	.958
27.0- 27.9	.000	.313	.000	.625	.000	.000	.938	100.000	.938	.958
28.0- 28.9	.000	.000	.000	.313	.000	.000	.313	100.000	.313	.319
29.0- 29.9	.625	.000	.000	.000	.000	.000	.000	.000	.625	.639
31.0- 31.9	.000	.000	.000	.625	.000	.000	.625	100.000	.625	.639
34.0- 34.9	.000	.000	.000	.313	.000	.000	.313	100.000	.313	.319
TOTAL	58.13	7.19	6.56	23.75	1.88	.31	39.38	40.26	97.81	100.00
PERCENT	59.42	7.35	6.71	24.28	1.92	.32	40.26			

FOREST INSECT AND DISEASE

SURVEY SUMMARY

Table 21

POPULATION STAND TABLE
BURNT MOUNTAIN FAIR
HOST SPECIES IS SPRUCE — THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE — THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS, AND REPRESENT AN AREA OF 3374. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

NUMBERS OF TREES PER ACRE

DBH	CORKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	4.584	2.292	.000	2.292	.000	9.167	15.681
6.0- 6.9	1.592	.000	.000	1.592	.000	3.183	5.445
7.0- 7.9	1.169	.000	.000	.000	.000	1.169	2.000
8.0- 8.9	2.686	.000	.000	.000	.000	2.686	4.594
9.0- 9.9	1.415	.707	.707	.000	.000	2.829	4.840
10.0- 10.9	.000	3.438	1.146	.000	.000	4.584	7.841
11.0- 11.9	1.421	.474	.474	.474	.000	2.841	4.860
12.0- 12.9	.393	1.592	.000	1.989	.000	3.979	6.806
13.0- 13.9	.339	1.017	.678	.678	.000	2.712	4.639
14.0- 14.9	.292	3.800	.292	1.169	.000	5.554	9.501
15.0- 15.9	.000	2.801	.000	.509	.000	3.310	5.663
16.0- 16.9	.448	2.014	.000	.448	.000	2.910	4.977
17.0- 17.9	.198	1.586	.000	.595	.000	2.379	4.070
18.0- 18.9	.531	1.768	.000	.177	.000	2.476	4.235
19.0- 19.9	.000	1.270	.000	.159	.000	1.428	2.443
20.0- 20.9	.000	.859	.000	.000	.000	.859	1.470
21.0- 21.9	.130	1.039	.000	.000	.000	1.169	2.000
22.0- 22.9	.000	.237	.000	.237	.000	.474	.810
23.0- 23.9	.217	1.191	.000	.108	.000	1.516	2.594
24.0- 24.9	.000	.497	.000	.000	.000	.497	.851
25.0- 25.9	.000	.458	.000	.000	.000	.458	.784
26.0- 26.9	.000	.763	.000	.000	.000	.763	1.305
27.0- 27.9	.000	.393	.000	.000	.000	.393	.672
28.0- 28.9	.000	.585	.000	.000	.000	.585	1.000
29.0- 29.9	.000	.204	.000	.000	.000	.204	.350
30.0- 30.9	.000	.191	.000	.000	.000	.191	.327
32.0- 32.9	.000	.056	.000	.000	.000	.056	.096
34.0- 34.9	.000	.050	.000	.000	.000	.050	.085
40.0- 40.9	.000	.036	.000	.000	.000	.036	.061
TOTAL	15.42	29.32	3.30	10.43	.00	58.46	73.63
PERCENT	26.37	50.15	5.64	17.83	.00	100.00	

Table 22

FOREST INSECT AND DISEASE

SURVEY SUMMARY

POPULATION STAND TABLE
BURNT MOUNTAIN FAIR
HOST SPECIES IS SPRUCE THE PEST IS SPRUCE BEETLE

THE METHOD OF SAMPLING WAS VARIABLE THE FIGURES IN THIS TABLE ARE BASED ON A SAMPLE OF 96 PLOTS, AND REPRESENT AN AREA OF 3374. ACRES.

BAF WAS 30.

THIS TABLE ONLY INCLUDES NON-HOST TREES

SQ. FT. OF BASAL AREA

PER ACRE

DBH	CURKBARK	DOUG FIR	WHITEFIR	ASPEN	OTHER	TOTAL	PERCENTILE
5.0- 5.9	.625	.313	.000	.313	.000	1.250	2.000
6.0- 6.9	.313	.000	.000	.313	.000	.625	1.000
7.0- 7.9	.313	.000	.000	.000	.000	.313	.500
8.0- 8.9	.938	.000	.000	.000	.000	.938	1.500
9.0- 9.9	.625	.313	.313	.000	.000	1.250	2.000
10.0- 10.9	.000	1.875	.625	.000	.000	2.500	4.000
11.0- 11.9	.938	.313	.313	.313	.000	1.875	3.000
12.0- 12.9	.313	1.250	.000	1.563	.000	3.125	5.000
13.0- 13.9	.313	.938	.625	.625	.000	2.500	4.000
14.0- 14.9	.313	4.063	.313	1.250	.000	5.938	9.500
15.0- 15.9	.000	3.438	.000	.625	.000	4.063	6.500
16.0- 16.9	.625	2.813	.000	.625	.000	4.063	6.500
17.0- 17.9	.313	2.500	.000	.938	.000	3.750	6.000
18.0- 18.9	.938	3.125	.000	.313	.000	4.375	7.000
19.0- 19.9	.000	2.500	.000	.313	.000	2.813	4.500
20.0- 20.9	.000	1.875	.000	.000	.000	1.875	3.000
21.0- 21.9	.313	2.500	.000	.000	.000	2.813	4.500
22.0- 22.9	.000	.625	.000	.625	.000	1.250	2.000
23.0- 23.9	.625	3.438	.000	.313	.000	4.375	7.000
24.0- 24.9	.000	1.563	.000	.000	.000	1.563	2.500
25.0- 25.9	.000	1.563	.000	.000	.000	1.563	2.500
26.0- 26.9	.000	2.813	.000	.000	.000	2.813	4.500
27.0- 27.9	.000	1.563	.000	.000	.000	1.563	2.500
28.0- 28.9	.000	2.500	.000	.000	.000	2.500	4.000
29.0- 29.9	.000	.938	.000	.000	.000	.938	1.500
30.0- 30.9	.000	.938	.000	.000	.000	.938	1.500
32.0- 32.9	.000	.313	.000	.000	.000	.313	.500
34.0- 34.9	.000	.313	.000	.000	.000	.313	.500
40.0- 40.9	.000	.313	.000	.000	.000	.313	.500
TOTAL	7.50	44.69	2.19	8.13	.00	62.50	.00
PERCENT	12.00	71.50	3.50	13.00	.00	100.00	

TABLE 23.--Estimates of new spruce beetle attacks (1984) on the Fort Apache Indian Reservation

Management compartment	Current attacks trees per acre (S.E.)	Total number current attacks (Trees [1])
Diamond Butte	5.2 (1.5)	12,882 to 23,551
Mount Ord	1.4 (0.8)	3,452 to 14,184
Bull Cienega	3.6 (1.7)	7,783 to 21,171
Sunrise	0.1 (0.1)	1 < to 787
Burnt Mountain	6.4 (1.8)	15,377 to 27,549

[1]Lower and upper estimates based on one standard error (68% confidence limits)

TABLE 24.--Results of sequential brood sampling survey, 1984, Fort Apache Indian Reservation

Sample location	Number samples[1]	Total number insects	Infestation trend prediction
Wolhenberg Draw (section 5)	26	181	Increasing
Paradise Creek (section 8)	20	377	Increasing
Paradise Butte (section 16)	22	166	Increasing
Smith Cienega (section 10)	20	226	Increasing
Bull Cienega (section 15)	20	210	Increasing

[1]The number of bark samples taken to reach an infestation trend decision.

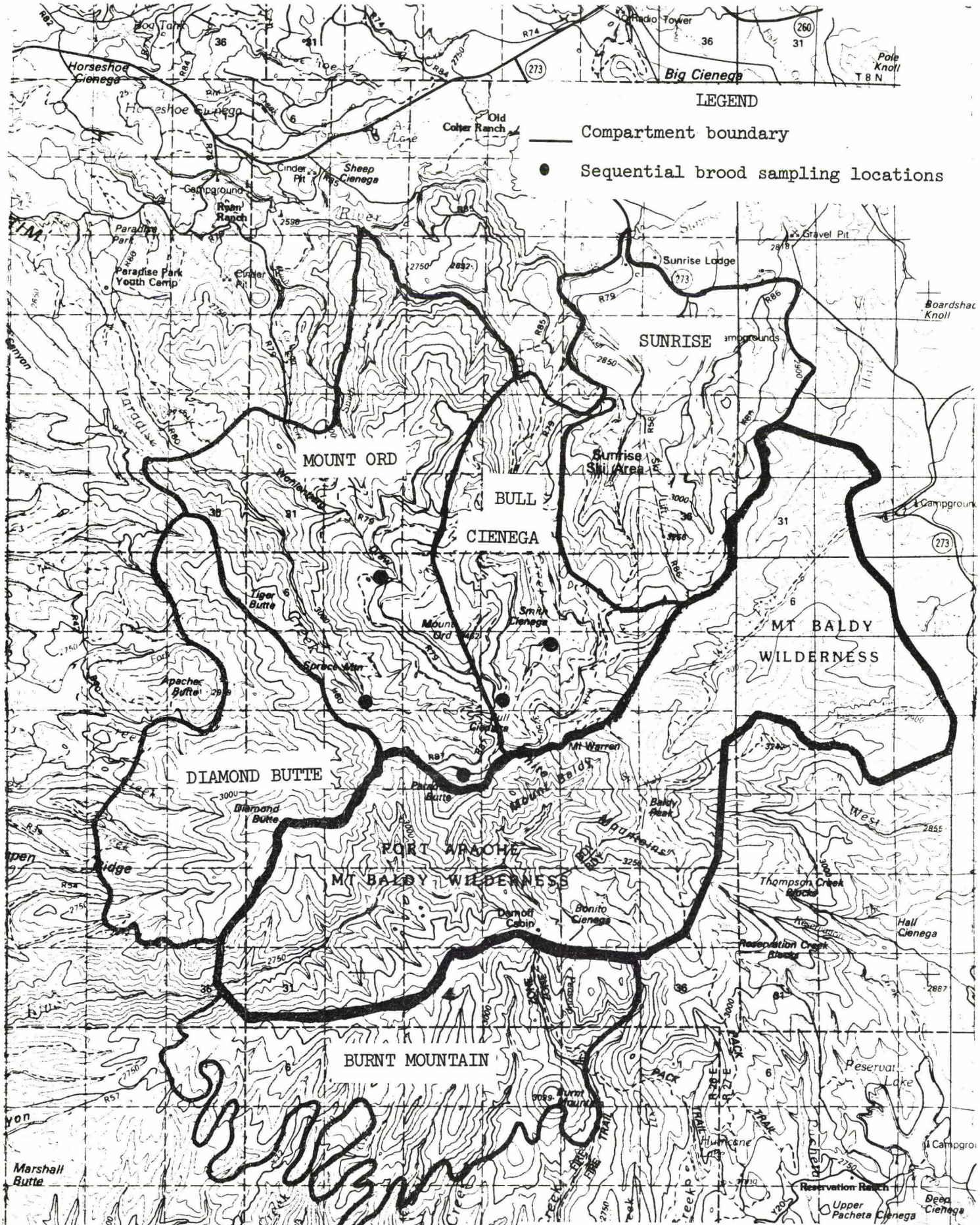

FIGURE 1.--Spruce-fir management compartments on the Fort Apache Indian Reservation, Arizona